

**SHIGA** INTERNATIONAL PATENT OFFICE

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Partial English translation of the attachment 1

**Powder Physics Figure Captions**

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(1) In oxides of metal such as Al, Si, and Ti, the surface of the metal oxide reacts with moisture in air, and they produce surface hydroxyl groups shown in FIG. 17.

(2) When powder having a hydrophilic surface such as carbon black is put in a linear fatty acid soap solution, since methyl group of fatty acid soap is non-hydrophilic, methyl groups are arranged toward the powder surface. In contrast, hydrophilic metal ion are arranged against the powder surface. Therefore, as shown in FIG. 19 (b), the surface of the powder is hydrophilic and the powder is easily dissolved in water.

Described above, the technique for changing properties of powder surface by adsorption is adopted in industrial field. Dispersibility of many pigments in vehicles (solvent) is improved by surface treatment.



Partial English translation of the attachment 2.

Japanese Unexamined Patent Application, First Publication No. H11-242916

**【0019】** If the thickness after drying of the transparent conductive film containing transparent conductive fine particles and binder is in a range from 0.1 to 20  $\mu\text{m}$ , resistance is decreased without decrease of transparency of the film. Therefore, the thickness is preferably in a range from 0.1 to 20  $\mu\text{m}$ , more preferably in a range from 0.3 to 15  $\mu\text{m}$ , and most preferably in a range from 0.5 to 20  $\mu\text{m}$ .



Partial English translation of the attachment 3

Surface Chemistry

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- (1) A method for determining whether powder being hydrophilic or non-hydrophilic includes a method which is an application of measuring method for specific surface area using gas adsorption.
- (2) Titanium dioxide powder having hydroxyl groups on the surface thereof is hydrophilic.
- (3) As shown in Table 6.9, silica gel, which is treated by diethylene glycol, 3-chloropropyl alcohol, phenol, or salicylic acid, is hydrophilic.
- (4) When phenolic hydroxyl group reacts with silanol in silica gel, which is treated by hydroxybenzyl alcohol, hydroxyl groups, which position in side chains, are arranged on the surface of powder and the powder may be hydrophilic.